

**REMARKS**

Claims 1-18 are pending after entry of this paper. Claims 1-18 have been rejected. Claims 1-5, 9, and 11-18 have been amended. Support for the amendments can be found throughout the instant specification and the drawings. No new matter has been added by these amendments.

Reconsideration and withdrawal of the pending rejections in view of the above amendments and below remarks are respectfully requested.

**Response to Claim Objections**

The Examiner has objected to claims 1, 3, 13, 16, and 17 for containing several informalities. Applicants have amended these claims in accordance with the Examiner's suggestions. Accordingly, applicants believe the objections to be overcome, and respectfully request withdrawal of same.

**Response to Rejections under 35 U.S.C. §112**

The Examiner has rejected claims 1-18 under 35 U.S.C. § 112, second paragraph for allegedly being indefinite.

The Examiner has specifically identified to the terms "lining element" or "lining elements" in claims 1 and 17 as allegedly rendering the claims indefinite. Without admitting the verity of the Examiner's contention, applicants have amended the claims to replace "lining element" and "lining elements" with "one or more lining elements."

The Examiner has also identified the term “means for connecting them together” as allegedly being unclear. Without admitting the verity of the Examiner’s contention, applicants have amended claims 1 and 17 to delete this term.

The Examiner has identified the terms “the junctions” and “the junction” in claims 15 and 16, respectively, as allegedly lacking antecedent basis. In light of the amendments to claims 15 and 16, applicants believe the claims to have antecedent basis.

In view of the above amendments and remarks, applicants believe claims 1-18 are in full compliance with the requirements of 35 U.S.C. §112, second paragraph. Accordingly, applicants respectfully request reconsideration and withdrawal of the rejections.

#### Response to Rejections under 35 U.S.C. §103

Claims 1-18 have been rejected under 35 U.S.C. §103(a) for allegedly being obvious over U.S. Patent No. 4,437,651 to Cordier et al. (“Cordier”) in view of U.S. Patent No. 6,843,958 to Korbik et al. (“Korbik”). The Examiner has essentially reiterated the alleged teachings of Cordier as set forth in the October 4, 2007 Office Action. The Examiner admits that Cordier “do[es] not disclose a single piece copper housing, as well as lining element(s) being movable in a vertical direction in response to thermal expansion during operation of the furnace” (page 6 of the Office Action, emphasis added). The Examiner has applied Korbik for allegedly teaching 1) “a single-piece cooling plate 10 forming a housing made of copper” and 2) “lining elements that are movable both horizontally and vertically in response to thermal expansion” (page 6 of the Office Action). The Examiner thus contends that it would have been obvious to modify the cooling element (or method of manufacture thereof) of Cordier with these two

teachings of Korbik in order to “allow for thermal expansion between contacting areas of plates having differing thermal expansion coefficients adjacent fastening elements, thus reducing thermal stress” (page 7 of the Office Action, citing portions of Korbik). Applicants respectfully disagree.

Korbik discloses a copper cooling plate for use in metallurgical furnaces, placed between a steel furnace jacket and a refractory lining, within which cooling medium flows during furnace operation (abstract and col. 1, lines 4-13). Korbik is directed to a method for connecting the copper cooling plate to the steel furnace jacket such that the copper cooling plate is resistant to changing thermal loads (col. 2, lines 18-24).

- *Korbik does not teach a housing made of one single piece*

The Examiner contends that Korbik discloses a single-piece cooling plate **10** forming a copper housing. The Examiner points to no support in Korbik for the contention that item **10** in Korbik is made of one single piece. Indeed, Korbik is completely silent as to whether or not item **10** is made of one-single piece, and does disclose any advantage of a single-piece housing. In contrast, claims 1 and 17 require the housing to be made of one single piece, and the instant specification, recognizing the advantage of this feature, states that “[t]he housing is preferably made of one single piece, so that seams in the structure are avoided” (page 2, lines 21-22 of the instant specification). Accordingly, applicants respectfully submit that the combination of Cordier and Korbik does not result in a cooling element comprising a copper housing made of one single piece.

- *Korbik does not teach lining elements movable in a vertical direction*

The Examiner also contends that Korbik teaches lining elements movable in a horizontal and vertical direction in response to thermal expansion. The Examiner does not specifically make reference to the feature of Korbik considered to be the “lining elements.” Applicants assert that the only feature disclosed by Korbik analogous to the “one or more lining element made of fireproof material” as recited in the instant claims is the “refractory lining.” Korbik generically discloses the “refractory lining” in describing the location of the cooling plate, but sets forth no details regarding the features of the refractory lining, such as if and how it is connected to the cooling plate. Korbik merely states that the cooling plates are “arranged between the furnace steel jacket and the refractory lining” (col. 1, lines 8-9). Korbik is completely silent as to any structural features or properties of the refractory lining. Accordingly, the disclosure of Korbik would not lead one of ordinary skill in the art to modify the lining elements of Cordier to be movable in a vertical direction in response to thermal expansion, because Korbik sets forth no teaching whatsoever about the refractory lining.

Regarding movability in response to thermal expansion, the Examiner appears to be referring to the connection of the copper cooling plate to the furnace steel jacket **15**. Korbik teaches a method of attaching the copper cooling plate to the furnace steel jacket in a manner which allows movements caused by thermal expansion (see, e.g., col. 2, lines 36-61). However, Korbik does not disclose or suggest one or more lining elements made of fireproof material connected to the housing, let alone one or more lining elements that are movable in a vertical direction in response to thermal expansion. As described above, Korbik only generically discloses a “refractory lining.” Accordingly, applicants respectfully submit that the combination of Cordier and Korbik does not, and can not, result in a copper housing with one or more lining

elements made of fireproof material movable in a vertical direction in response to thermal expansion.

In view of the above remarks, applicants assert that Korbik does not remedy the admitted deficiencies of Cordier, namely the disclosure of a housing made of one single piece, and the disclosure of lining elements made of fireproof material that are movable in a vertical direction in response to thermal expansion. Therefore, Cordier in view of Korbik does not render claims 1 and 17 obvious. Accordingly, applicants respectfully request reconsideration and withdrawal of the rejection of claims 1-18 under 35 U.S.C. §103(a).

#### Dependent Claims

Applicants have not independently addressed all of the rejections of the dependent claims. Applicants submit that for at least similar reasons as to why independent claims 1 and 17 from which all of the dependent claims 2-16 and 18 depend are believed allowable as discussed above, the dependent claims are also allowable. Applicants however, reserve the right to address any individual rejections of the dependent claims and present independent bases for allowance for the dependent claims should such be necessary or appropriate.

#### CONCLUSION

Based on the foregoing remarks, applicants respectfully request reconsideration and withdrawal of the rejection of claims and allowance of this application. Favorable action by the Examiner is earnestly solicited.

**AUTHORIZATION**

The Commissioner is hereby authorized to charge any additional fees which may be required for consideration of this Amendment to Deposit Account No. **13-4500**, Order No. 4819-4734.

This paper is believed to be timely filed. In the event that an extension of time is required, or which may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account No. **13-4500**, Order No. 4819-4734.

Respectfully submitted,  
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Dated: June 11, 2008

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